

Association for Information Systems AIS Electronic Library (AISeL)

AMCIS 1999 Proceedings

Americas Conference on Information Systems
(AMCIS)

December 1999

A Tale of Two Genres?: Knowledge Management in Organizations

Mani Subramani
University of Minnesota

Gordon Davis
University of Minnesota

Follow this and additional works at: <http://aisel.aisnet.org/amcis1999>

Recommended Citation

Subramani, Mani and Davis, Gordon, "A Tale of Two Genres?: Knowledge Management in Organizations" (1999). *AMCIS 1999 Proceedings*. 166.
<http://aisel.aisnet.org/amcis1999/166>

This material is brought to you by the Americas Conference on Information Systems (AMCIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in AMCIS 1999 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

A Tale of Two Genres?: Knowledge Management in Organizations

Mani Subramani (msubramani@csom.umn.edu) and Gordon Davis (gdavis@csom.umn.edu)
Carlson School of Management, University of Minnesota

Abstract

This paper suggests that organizational learning phenomena belong to fundamentally two different types: the relatively deterministic *industrial genre* and the idiosyncratic *behavioral genre*. These genres differ substantially from each other on key dimensions such as the nature of embedding of learning, cumulativeness of learning, learning orientation and criteria used to evaluate outcomes. Researchers investigating organizational learning phenomena need to be sensitive to these differences to be able to effectively distinguish patterns that would otherwise be masked by variations attributable to the genres.

Introduction

Our understanding of the patterns of organizational learning and knowledge creation in organizations (Cohen and Leventhal 1990, Huber 1992) is drawn from a variety of sources. This includes studies from contexts such as manufacturing operations (Argote, Beckman and Epple 1990, Henderson and Clark 1990), management consulting (Starbuck 1992), service operations (Pentland 1992, Seely Brown and Duguid 1991), new product development (Nonaka and Takeuchi 1995) and military exercises (Starbuck 1996, Henderson, Baird and Watts 1996). While the broad scope of studies informing conceptual analyses of organizational learning potentially provides fertile grounds for theory formulation, it also increases the likelihood that basic variations in the underlying phenomenon are masked in attempts to arrive at generalizations across multiple contexts. We suggest that the researchers have failed to recognize two fundamentally different genres of organizational learning in organizations: the relatively deterministic industrial genre and the idiosyncratic behavioral genre. The characteristics of learning phenomena in these two contexts are quite distinct and the recognition of the differences is necessary to allow cumulative theory building in the discipline. We suggest that the differences between the two genres hinge, among others, on factors such as the locus of embedding, cumulativeness, learning orientation and outcome evaluation criteria. We illustrate each of these factors by drawing on detailed descriptions of organizational learning in the manufacturing industry from prior research and point to the patterns of variation in the two genres that yet remain unrecognized in the literature. We believe that the homogeneous conception of

organizational learning is particularly problematic for information systems research as clarity related to the nuances of behavioral processes is often central to successful application of information technologies (Sabherwal and Robey 1993).

Consider two instances of organizational learning described in the literature, both set in the manufacturing industry 1. The first relates to learning of steel production at Chaparral Steel (Leonard Barton 1992, 1994) and the second to learning during process re-design and installation of information systems in ManCo, a manufacturing company (Sarker and Lee 1998). In describing the development of new steel manufacturing techniques at Chaparral, Leonard Barton (1994, 1995 check) describes the learning processes involved as: *"One way to push equipment performance and ensure learning is to set goals for each project considerably beyond current production capabilities. Chaparral managers set a very ambitious goal for the near net-shape project: to produce large (sixteen and twenty-four inch wide) structural steel beams at the same per-pound cost as the simple round reinforcing bars, the company's first product... Reaching this cost objective (half of Big Steel's) required drastically reducing the energy costs (roughly 25 percent of total) of rolling the steel into the required end shape."* (Leonard Barton 1994, page 25).

Contrast this with the business process redesign effort described by Sarker and Lee (1998)2:

"It was a series of meetings. We met..weekly and you just began to interact..and Judith (the MIS Manager) controlled how the meetings were to go..and that helped you define everything...and when companies (the IT vendors) came in to give their presentation, that is when you started getting into the nuts and bolts of it....So it is a process...it is something you just don't go in and (say)...OK, I am going to want this, this, this...you had to think about what was needed [regarding the business process], and you brainstormed, then...you talked about what is definitely needed. You went back to your bosses...ask them what they were looking for...you would brainstorm with that and then go back to the meetings." (page 244).

There are several similarities between the processes in the two cases: each of them is an account of learning that results in artifacts enhancing the capabilities of the firm. Further, both of them relate to major changes that reshape routine operations in the two firms. In the first case, the artifact produced through organizational learning efforts was an advanced manufacturing process involving patented molds and an innovative steel fabrication method. The artifact in the second case was a sophisticated information systems infrastructure that

enhanced cross-functional interactions involved in the complex procedures for order processing. In spite of the likeness among the two instances, the organizational learning phenomena in the two contexts are fundamentally different on several key dimensions.

Embedding of Learning: The Chaparral case involves learning that is largely embedded in the design of the steel making system such as the shape of the mold. Only a small portion is embedded in the knowledge of new operating processes created in the development teams and plant operators as well. In contrast, at ManCo, the artifact: the redesigned business process embeds a very small component of the organizational learning that occurs. The learning is almost entirely embedded in the consensual shared mental model held by participants in the redesign effort and their comprehension of the complex interactions among multiple functions in executing the key steps in order processing. So, while the learning is captured almost entirely in the blueprints and the standard operating procedures of Chaparral, only a part of this learning is captured in the structure charts, business rules, process flow charts and the design of the information system itself. Moreover, it is not clear that the learning by Manco is amenable to codification at all, as it is for Chaparral.

Learning Orientation: Goal Directedness vs. Goal Discovery: In Chaparral, the key task of the team is the articulation of cause-effect linkages among complex physical phenomena to reach the specified goal in the production of steel. In ManCo, the key task is the consensual identification of the core problem to be addressed (in this case, the order-processing processes) to achieve the desired improvements in organizational functioning. In ManCo the framing of the problem is a major step that *precedes* the articulation of the cause-effect linkages between the actions of multiple departments that contribute to the problem. This framing then determines the identification of changes to these processes that would achieve the desired outcomes. In the case of Chaparral Steel, the learning centers primarily around the understanding and refinement of dynamic relationships of chemical and physical phenomena whereas the learning in ManCo largely involves reconciling and intervening into the complex mix of task interdependencies and social linkages. The differences in learning orientations is thus significant: in the Chaparral case it is the *uncovering of the logic* underlying a largely material and physical phenomenon whereas in the case of ManCo, it is the *emergent construction of the logic* underlying the social-instrumental interactions among individuals and groups. The implications of the difference are that activities in Chaparral were oriented towards discovering definite relationships among the phenomena rather than surfacing and reconciling the social

construction of reality as viewed by multiple departments. The actions that achieve this are consequently different: creative experimentation using information provided by participants involved and testing the conceptualization of the process innovations in Chaparral as opposed to the consensual visualization of a new socially constructed process validated by the ability to mobilize social resources around workable alternatives in MANCO.

Evaluation Criteria: The criteria to evaluate outcomes of the learning in the two cases are different, the verification of cause and effect through the examination of valued outcomes in the case of Chaparral and the subjective perceptions of success of the initiative of stakeholders in the case of MANCO. We believe that the distinction goes beyond the superficial variation attributable to the way the two projects were managed and inherent in the differences between learning around industrial processes and behavioral processes.

Overall, this analysis suggests that there are substantial differences among factors in the two genres warranting greater sensitivity to the issue by researchers. However, we believe that the generalizability of our arguments, though supported by two field studies needs further examination. The two genres though mutually exclusive in our conception and as manifested in the two field examples discussed, may often be observed simultaneously when organizational initiatives have components that belong to the two genres. This thus suggests that researchers into learning phenomena need to pay particular attention to the level of analysis: making sure that their choice maximizes the homogeneity of patterns through purposive selection that aggregates components of related genres.

In particular, the fundamental differences between the two genres of organizational learning, need to be recognized in designing information technologies to support organizational learning. While both the genres can benefit from IT support for coordination, communication and collaboration, more research is needed to articulate the patterns of IT support that are found to be most effective in the two genres. One hypothesis is that IT support for the industrial genre of organizational learning might emphasize the creation of databases to derive appropriate information, discussion forums to catalog prior experience and act as repositories for multiple views on specific issues. Such repositories could be powerful forces to coalesce on workable solutions. In contrast, effective IT support for the behavioral genre might involve the creation of opportunities for members to experience the reality of others, possibly through videoconferencing and means to share the experiences of individuals involved.

We have used two examples from the literature to argue that they may each belong to two different genres of

learning processes: the industrial genre and the behavioral genre. This distinction needs to be recognized not only for cumulative theory building but also for the more pragmatic aim of devising appropriate IT support. Finally, we suggest that it is only through rich articulations of the activities underlying the contexts of learning and knowledge creation in organizations can researchers explicate and understand the complex strands of action involved in the complex processes comprising organizational learning. To this end, we echo prior calls for more action research (Markus 1996) and greater sensitivity in future research to fundamental differences arising from the two genres identified here.

References

- Argote, L., Beckman, S.L. and Epple, D. "The Persistence and Transfer of Learning in Industrial Settings," *Management Science* (36:2), 1990, pp. 140-154.
- Cohen, W.M. and Levinthal, D.A. "Absorptive Capacity: A New Perspective on Learning and Innovation," *Administrative Science Quarterly* (35:March), 1990, pp. 128-152.
- Henderson, J.C., Baird, L. and Watts, Stephanie S., "Learning from CALLS," Systems Research Center Working Paper, Boston University, 1996.
- Henderson, R.M. and Clark, K.B. "Architectural innovation: The Reconfiguration of Existing Product Technologies and the Failure of Established Firms," *Administrative Science Quarterly* (35), 1990, pp. 9-30.
- Leonard-Barton, D. *Wellsprings of Knowledge*, Harvard Business Press, Boston, 1995.
- Leonard-Barton, D. "The Factory as a Learning Laboratory," *Sloan Management Review* (34:1), 1992, pp. 23-38.
- nMarkus, M.L. and Benjamin, R.I. "Change Agency--the next IS frontier," *MIS Quarterly* (20:4), 1996, pp. 385-407.
- Nonaka, I. and Takeuchi, H. *The Knowledge Creating Company: How Japanese Companies Create the Dynamics of Innovation*, Oxford University Press, New York, 1995.
- Sabharwal, R. and Robey, D. "Reconciling Variance and Process Strategies for Studying Information Systems Development," *Informations Systems Research* (6:4), 1996, pp. 303-327.
- Sarker, S. and Lee, A.S. "Using a Positivist Case Research Methodology to Test a Theory About IT-Enabled Process Redesign," *Proceedings of the International Conference on Information Systems*, Helsinki, Finland, 1998, pp. 237-251.
- Starbuck, W.H. "Learning by Knowledge-Intensive Firms," *Journal of Management Studies* (29:6), 1992, pp. 713-740.
- Starbuck, W.H. "Unlearning Ineffective or Obsolete Technologies," *International Journal of Technology Management* (11), 1996, pp. 725-737.